

# **LORRAINE'S DAY CARE (PWS 5160074) SOURCE WATER ASSESSMENT FINAL REPORT**

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**March 18, 2002**



## **State of Idaho Department of Environmental Quality**

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## Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for Lorraine's Day Care, Burley, Idaho* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The Lorraine's Day Care drinking water system (PWS 5160074) consists of one ground water well source. The well has an overall rating of moderate susceptibility to inorganic contaminants, volatile organic contaminants, and microbial contaminants. This rating is primarily due to a moderate rating for both hydrologic sensitivity and system construction. The well rated automatically high for synthetic organic contaminants due a detection of atrazine in the well. Agricultural land use adds the most points to the potential contaminant land use rating.

The only inorganic contaminants (IOCs) detected in the sampled water have been arsenic, chromium, fluoride, and nitrate. Nitrate levels have varied from 5.2 milligrams per liter (mg/L) to 7.8 mg/L. The Maximum Contaminant Level (MCL) for nitrate is 10 mg/L. The synthetic organic contaminant (SOC) pesticide atrazine was detected in the well water in December 1998 at a level of 0.14 parts per billion (ppb). In December 2000, Atrazine was not detected. The MCL for Atrazine is 3 ppb. Total coliform bacteria and volatile organic contaminants (VOCs) have never been detected in the well water.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For Lorraine's Day Care, drinking water protection activities should first focus on maintaining the wellhead and surface seal in good condition to prevent contamination at the wellhead. Lorraine's Day Care should implement a disinfection system if microbial contamination becomes an issue. Any spills from the potential contaminant sources listed in Table 1 should be carefully monitored, as should any future development in the delineated areas. Lorraine's Day Care should be aware of the levels of nitrate in their water as they are approaching the MCL. In addition, the Lorraine's Day Care delineation crosses a SOC priority area for the pesticide atrazine, which has been detected in the well water. Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. Lorraine's Day Care could consider installing a deeper ground water well into the basalt aquifer beneath the alluvium. Surrounding wells in the area that are drilled into the basalt are influenced less by the intense agricultural land use practices. Any new wells are required to follow current public water system well construction standards. Most of the designated areas are outside the direct jurisdiction of Lorraine's Day Care. Partnerships with state and local agencies and industry groups should be established and are critical to success.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the U.S. Environmental Protection Agency. Many transportation corridors transect the delineation. Therefore, the Idaho Department of Transportation should be included in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

A community with a fully developed drinking water protection program will incorporate many strategies, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

# SOURCE WATER ASSESSMENT FOR THE LORRAINE'S DAY CARE, BURLEY, IDAHO

## Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings, used to develop this assessment, is also attached.

### Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess the over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The ultimate goal of this assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treating a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The local community based on its own needs and limitations should determine the decision as to the amount and types of information necessary to develop a drinking water protection program. Drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

## Section 2. Conducting the Assessment

### General Description of the Source Water Quality

The Lorraine's Day Care well is a non-community non-transient well that serves approximately 40 people through one connection. The well is located in Cassia County, just south of the City of Burley (Figure 1).

The main IOC water chemistry issue recorded in the public water system is nitrate, with readings exceeding half the MCL consistently since 1997. Additionally, the SOC pesticide atrazine was detected in the well water in December 1998 at a level below the MCL. No total coliform bacteria or VOCs have been detected in the well.

County level nitrogen fertilizer use, county level herbicide use, and total county level ag-chemical use are rated as high for the area. In addition, the delineation falls within a nitrate priority area and an SOC priority area for the pesticide atrazine.

Though the levels of nitrate and atrazine are below the MCLs for both contaminants, Lorraine's Day Care should be aware of the general health affects associated with water containing these chemicals, especially since children tend to be more susceptible than adults.

Exposure to nitrate in concentrations **over** the 10 mg/L MCL has been associated with a condition called methemoglobinemia or "blue-baby syndrome" in infants six months of age and younger (EPA, 1990a). Nitrate in drinking water used to make baby formula is converted to nitrite in the baby's stomach. Nitrite changes hemoglobin (that part of the blood that carries oxygen to the cells) to methemoglobin, which is unable to bind with oxygen, thus depriving the cells of oxygen. In extreme cases it can cause death.

Several investigators nationally have studied the chronic health and reproductive impacts of drinking nitrate contaminated water. Recent studies have implicated nitrate exposure as a possible risk factor associated with non-Hodgkin's lymphoma, gastric cancer, hypertension, thyroid disorder and birth defects (Gilli, et. al., 1984, Scragg, 1982, Rademacher, 1992). A recent investigation conducted by local public health officials in La Grange County, Indiana implicated nitrate-contaminated drinking water as the possible cause of several miscarriages (Schubert et. al., 1997).

EPA (2001) has found atrazine to potentially cause the following health effects when people are exposed to it at levels **above** the MCL for relatively short periods of time: congestion of heart, lungs and kidneys; low blood pressure; muscle spasms; weight loss; damage to adrenal glands.

Atrazine has the potential to cause the following effects from a lifetime exposure at levels above the MCL: weight loss, cardiovascular damage, retinal and some muscle degeneration; cancer.

STATE OF IDAHO



## **Defining the Zones of Contribution – Delineation**

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ used a refined computer model approved by the EPA in determining the time-of-travel (TOT) zones for water associated with the Goose Creek – Golden Valley aquifer in the vicinity of Lorraine's Day Care. The computer model used site-specific data, assimilated by DEQ from a variety of sources including local area well logs and hydrogeologic reports summarized below.

The well extracts water from the shallow alluvium overlying the basalt of the Snake River Group. This shallow aquifer is the same one that the City of Burley uses for its many irrigation wells. The alluvium of this aquifer is recharged by irrigation return flow, leakage from streams and canals flowing through the area, and precipitation. In addition, a stretch of the Snake River to the east of Burley contributes water to the shallow alluvium. While some of the perched aquifer water of the Burley Irrigation District discharges to drains and the Snake River, the bulk of the water recharges to main water table of the basalt (Crosthwaite, 1969).

Locally, Lorraine's Day Care is relatively close to the H Canal. This source of recharge for the well is within the 3-year TOT delineation and is a major feature causing the delineation to stretch to the south.

Twenty-four years of records since 1964 set the average yearly rainfall in Burley at 8.6 inches (Crosthwaite, 1969). The Albion Range and the fault zone at its base bound the plain on the southeast and the Rock Creek Hills bound the plain on the southwest. The lowland slopes northward from an elevation of about 4,600 feet at Oakley to 4,150 feet at Burley (Crosthwaite, 1969).

Quaternary alluvium consists mostly of clay, silt, sand, and gravel. The unit ranges from unconsolidated to well compacted and is poorly sorted, leading to the poor drainage condition. South of Burley, alluvium deposited by the Snake River interfingers with alluvium deposited by Goose Creek. The thickness of the unit ranges from 1 to 300 feet (Young and Newton, 1989).

The delineated source water assessment area for the Lorraine's Day Care well can best be described as a pie slice extending south to southeast of the well, with a width of one mile at the end and a length of about 1.5 miles (Figure 2). The data used by DEQ in determining the source water assessment delineation areas are available upon request.

## **Identifying Potential Sources of Contamination**

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and the Lorraine's Day Care and from available databases.

The dominant land use outside the Lorraine's Day Care area is irrigated agriculture. Land use within the immediate area of the wellhead consists of day care facility, and agricultural. State Highway 27 is the major transportation corridor in the area. The H Canal crosses the delineation within the 3-year TOT.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both, to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the potential for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

### Contaminant Source Inventory Process

A contaminant inventory of the study area was conducted in July and August of 2001. This involved identifying and documenting potential contaminant sources within the Lorraine's Day Care Source Water Assessment Areas through the use of computer databases and Geographic Information System maps developed by DEQ. Lorraine Morgan, the Lorraine's Day Care Water Operator, confirmed this information.

The delineation (Table 1, Figure 2) has two potential sources including the H Canal and State Highway 27. If an accidental spill occurred in any of these sources, IOC, VOCs, SOC, or microbial contaminants could be added to the aquifer system.

**Table 1. Lorraine's Day Care, Potential Contaminant Inventory**

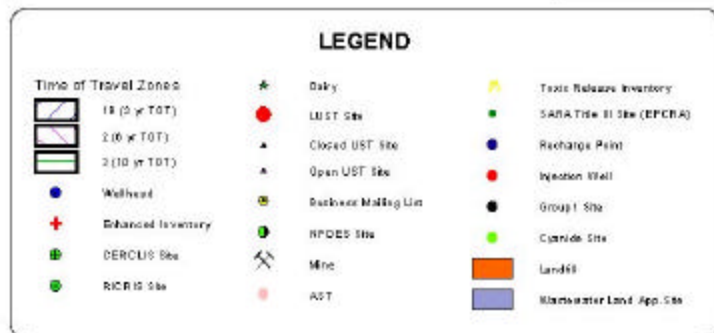
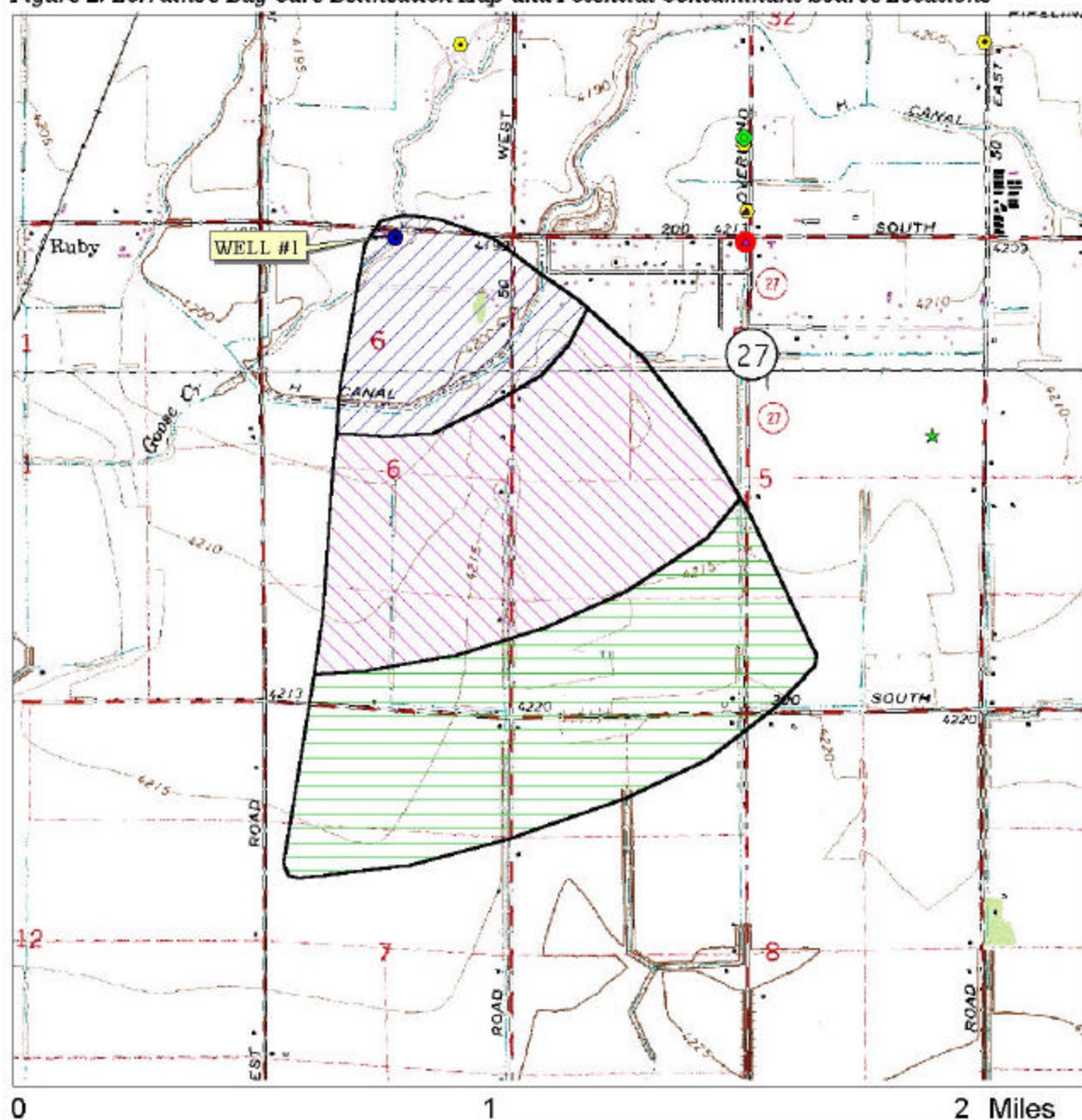
Site #	Source Description <sup>1</sup>	TOT Zone <sup>2</sup> (years)	Source of Information	Potential Contaminants <sup>3</sup>
	H Canal	0-3	GIS Map	IOC, VOC, SOC, Microbes
	State Highway 27	6-10	GIS Map	IOC, VOC, SOC, Microbes

<sup>2</sup> TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

<sup>3</sup> IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical



Figure 2. Lorraine's Day Care Delineation Map and Potential Contaminant Source Locations



**PWS# 5160074**  
**WELL #1**

### **Section 3. Susceptibility Analyses**

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment A contains the susceptibility analysis worksheet. The following summaries describe the rationale for the susceptibility ranking.

#### **Hydrologic Sensitivity**

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

The hydrologic sensitivity is moderate for the well (see Table 2). The poorly drained nature of the soil reduces the downward movement of contaminants. The well log shows that the vadose zone is made of gravel, the water table is at 34 feet, and that there is not sufficient thickness in low permeability layers.

#### **Well Construction**

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in Sanitary Surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

The Lorraine's Day Care drinking water system consists of one well that extracts ground water for business and educational uses. The well rated moderate susceptibility for system construction. The 2000 Sanitary Survey stated that the wellhead and surface seal requirements were being met and that the well was protected from surface flooding.

The well is 70 feet deep and is constructed with 0.250-inch thick, 6-inch diameter casing. The surface seal is installed to a depth of 20 feet, using puddling clay, into a gravel layer. The casing is installed to the bottom of the well and is set into gravel. Perforations are installed from 60 feet below ground surface (bgs) to 63 feet bgs. The producing zones are the first location that water is encountered. Though the Lorraine's Day Care well may have met construction standards at the time of its installation as a domestic well, current public water system (PWS) well construction standards are stricter.

The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWS to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Some of the requirements include casing thickness, well tests, and depth and formation type that the surface seal must be installed into. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Six-inch diameter wells require a casing thickness of at least 0.288-inches. Well tests are required at the design pumping rate for 24 hours or until stabilized drawdown has continued for at least six hours when pumping at 1.5 times the design pumping rate. The Lorraine's Day Care well received an additional point in the system construction category because it does not meet current well construction standards, although they may have at time of construction.

### **Potential Contaminant Source and Land Use**

The well rated high for IOCs (e.g., arsenic, nitrate) and moderate for VOCs (e.g., petroleum products), SOCs (e.g., pesticides), and microbial contaminants (e.g., bacteria). The irrigated agricultural land uses contributed the largest numbers of points to the contaminant inventory rating. County level nitrogen fertilizer use, county level herbicide use, and total county level agriculture chemical use are rated as high. In addition, the delineation falls within a nitrate priority area and an SOC priority area for the pesticide atrazine.

### **Final Susceptibility Rating**

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, sources within 50 feet of the wellhead, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well, despite the land use of the area, because a pathway for contamination already exists. In this case, the well rated automatically high for SOCs because of the atrazine detection in December 1998. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0- to 3-year time-of-travel zone (Zone 1B) and much agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the well rated high SOCs and moderate for IOCs, VOCs, and microbial contaminants.

**Table 2. Summary of the Lorraine's Day Care Susceptibility Evaluation**

Table 2: Summary of the Effluent's Day Care Susceptibility Evaluation										
Source	Susceptibility Scores <sup>1</sup>									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well	M	H	M	M	M	M	M	M	H* <sup>2</sup>	M

<sup>1</sup> H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

<sup>2</sup> H\* = well rates automatically high because of Atrazine detection in December 1998

### Susceptibility Summary

In terms of total susceptibility, the well rated high for IOCs and SOCs and moderate for VOCs and microbial contaminants. Multiple agricultural land uses, high county wide nitrogen fertilizer use, high county wide herbicide use, State Highway 27, and the H Canal contributed the most land use points to the susceptibility rating. Moderate hydrologic sensitivity and moderate system construction scores also contributed to the overall scores.

The main IOC water chemistry issue recorded in the public water system is nitrate, with readings exceeding half the MCL consistently since 1997. Additionally, the SOC pesticide atrazine was detected in the well water in December 1998 at a level below the MCL. No total coliform bacteria or VOCs have been detected in the well.

County level nitrogen fertilizer use, county level herbicide use, and total county level agriculture chemical use are rated as high for the area. In addition, the delineations fall within a nitrate priority area and an SOC priority area for the pesticide atrazine.

### Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective drinking water protection program is tailored to the particular local source water protection area. A community with a fully developed drinking water protection program will incorporate many strategies, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For Lorraine's Day Care, drinking water protection activities should first focus on maintaining the wellhead and surface seal in good condition to prevent contamination at the wellhead. Lorraine's Day Care should implement a disinfection system if microbial contamination becomes an issue. Any spills from the potential contaminant sources listed in Table 1 should be carefully monitored, as should any future development in the delineated areas. Lorraine's Day Care should be aware of the levels of nitrate in their water as they are approaching the MCL. In addition, the Lorraine's Day Care delineation crosses an SOC priority area for the pesticide atrazine, which has been detected in the well water.

Other practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas should be implemented. Lorraine's Day Care could consider installing a deeper ground water well into the basalt aquifer beneath the alluvium. Surrounding wells in the area that are drilled into the basalt are influenced less by the intense agricultural land use practices. Any new wells are required to follow current public water system well construction standards. Most of the designated areas are outside the direct jurisdiction of the Lorraine's Day Care. Partnerships with state and local agencies and industry groups should be established and are critical to success.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the U.S. Environmental Protection Agency. Many transportation corridors transect the delineation. Therefore, the Idaho Department of Transportation should be included in protection activities. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service.

### **Assistance**

Public water suppliers and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Twin Falls Regional DEQ Office (208) 736-2190

State DEQ Office (208) 373-0502

Website: <http://www.deq.state.id.us>

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper (mlharper@idahoruralwater.com), Idaho Rural Water Association, at (208) 343-7001 for assistance with drinking water protection (formerly wellhead protection) strategies.

## POTENTIAL CONTAMINANT INVENTORY

### LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund, is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100-year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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## Attachment A

### Lorraine's Day Care Susceptibility Analysis Worksheet



The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5    Low Susceptibility

6 - 12   Moderate Susceptibility

≥ 13    High Susceptibility

## Ground Water Susceptibility Report

Public Water System Name :

LORRAINES DAY CARE

Well# : WELL #1

Public Water System Number 5160074

11/08/2001 12:29:42 PM

## 1. System Construction

SCORE

Drill Date	06/01/1994	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	2000
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0

Total System Construction Score 4

## 2. Hydrologic Sensitivity

Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2

Total Hydrologic Score 4

## 3. Potential Contaminant / Land Use - ZONE 1A

IOC  
ScoreVOC  
ScoreSOC  
ScoreMicrobial  
Score

Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	YES	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2

## Potential Contaminant / Land Use - ZONE 1B

Contaminant sources present (Number of Sources)	YES	1	1	1	1
(Score = # Sources X 2 ) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or	YES	5	1	1	
4 Points Maximum		4	1	1	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	2	0
Land use Zone 1B Greater Than 50% Irrigated Agricultural Land		4	4	4	4

Total Potential Contaminant Source / Land Use Score - Zone 1B 12 7 9 6

## Potential Contaminant / Land Use - ZONE II

Contaminant Sources Present	NO	0	0	0
Sources of Class II or III leacheable contaminants or	YES	1	0	0
Land Use Zone II Greater Than 50% Irrigated Agricultural Land		2	2	2

Potential Contaminant Source / Land Use Score - Zone II 3 2 2 0

## Potential Contaminant / Land Use - ZONE III

Contaminant Source Present	YES	1	1	1
Sources of Class II or III leacheable contaminants or	YES	1	1	1
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1

Total Potential Contaminant Source / Land Use Score - Zone III 3 3 3 0

Cumulative Potential Contaminant / Land Use Score 22 14 18 8

## 4. Final Susceptibility Source Score

12 11 12 11

## 5. Final Well Ranking

Moderate Moderate High\* Moderate